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Review Article

Integrative and lifestyle medicine strategies should include Earthing (grounding): Review of research evidence and clinical observations

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ABSTRACT

Earthing (also known as grounding) refers to the discovery that bodily contact with the Earth's natural electric charge stabilizes the physiology at the deepest levels, reduces inflammation, pain, and stress, improves blood flow, energy, and sleep, and generates greater well-being. Such effects are profound, systemic, and foundational, and often develop rapidly. Earthing is as simple as routinely walking barefoot outdoors and/or using inexpensive grounding systems indoors while sleeping or sitting, practices that restore a lost and needed electric connection with the Earth. Some 20 studies to date have reported intriguing evidence of wide and significant physiological improvements when the body is grounded vs. non-grounded. The research, along with numerous anecdotal reports, demonstrates that Earthing clearly deserves inclusion in the clinical practice of preventive, alternative, and lifestyle medicine and has great potential to render these approaches more effective.

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Introduction

Core components of alternative, lifestyle, and preventive medicine include nutrition, exercise, stress management, and relationships. Missing from this formula is the practice of Earthing (also commonly referred to as grounding; in this paper we will primarily use the term Earthing).

Earthing simply means reconnecting the conductive human body to the Earth's natural and subtle surface electric charge, an effortless lifestyle activity that systemically influences the basic bioelectrical function of the body. Doing so surprisingly stabilizes the physiology, reduces inflammation, pain, and stress, improves sleep, blood flow, and lymphatic/venous return to the heart, and produces greater well-being.

These are systemic, profound effects. People often report that after they start Earthing they feel and look healthier and younger. Those with pain report less pain.[1] Even mood improves.[2]

Earthing is easy to do and often achieves rapid results, particularly for individuals with chronic health disorders.

There are two basic ways of Earthing: 1) indoors, involving inexpensive Earthing systems (conductive mats, pads, body bands, or patches) while sitting or sleeping, and 2), in its most natural form, and free, by spending time barefoot outdoors in contact with natural conductive surfaces, like grass, soil, gravel, stone, and sand.

Just as vitamin D in our body is produced by energy and frequencies generated from the sun, 93 million miles away, the Earth right under our feet provides unique energy and frequencies that directly influence our body.

Earthing restores a primordial electric connection to the Earth lost over time because of human lifestyle. Earthing appears to correct what we call an "electron deficiency syndrome,"[3] an overlooked and likely significant cause of multiple health disorders.

We believe that Earthing as a preventive/lifestyle strategy can counteract the sharp rise in non-communicable diseases throughout the world, a major challenge and barrier to global development. Such diseases include cardiovascular, respiratory, neurodegenerative, and

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auto-immune conditions, type 2 diabetes, and cancer. These disorders account for more than 40 million deaths annually, and affect all nationalities and socio-economic classes.[4,5]

As is well known, the rise in global illness has brought with it a chronic pain epidemic engulfing perhaps as many as 20% of adults,[6] and, as a further byproduct, an alarming spike in painkilling medication usage, side effects, and addiction. Because of this development the U.S. Government declared a health emergency in 2017.[7] The problem is growing worldwide as well.[8]

These are all conditions and issues we encounter in our clinical practices.

Earthing offers a potent health and healing tool for prevention and therapy alike, a tool that can be used by itself or in conjunction with clinical treatments to address not just symptoms but root causes of symptoms and dysfunction that begin at the deep bioelectrical levels of the physiology.

Our lost connection to the Earth

The Earth has long been recognized and utilized by the electrical industry as an essential source of stability and safety. That is where the synonymous terms Earthing and grounding originated. All modern electrical systems, from large grids and power stations to homes, buildings, and factories, and the machinery and appliances powered by electricity, are all connected to the Earth for stability and safety. One might say that electrical systems are "healthier" precisely because of their connection to the Earth.

It is now time for the medical world to start recognizing that a body connected to the ground – a grounded body – is similarly more stable and healthier. It functions more naturally, a state lost over time because humans have become largely disconnected from the Earth. We obviously no longer sleep on the ground, rarely walk barefoot outdoors, and, for more than a half century, almost exclusively wear insulating synthetic soled shoes instead of traditional and conductive leather footwear. We live and work, and spend much or most of our time disconnected, often far above ground in high rises.

The lost contact with the Earth may contribute to electrical imbalances, a build-up of disruptive static electricity (positive charges), and an unrecognized electron deficiency in the body, and with it, vulnerability to dysfunction, disorder, and disease.

How can this possibly be, you might ask?

The surface of Planet Earth, as is well known, is affected electrically by countless lightning strikes, solar radiation, and other atmospheric dynamics. Not so well known, however, is that these phenomena endow our landmasses and bodies of water with a continuously renewed supply of subatomic particles called free electrons that give the Earth a natural negative electric charge.[9,10]

Research on biological Earthing suggests that this very same electric charge, and its limitless supply of electrons and their diurnal frequencies, plays a governing and nurturing role for both the animal and plant kingdoms – a form of "electric nutrition," so to speak. The research findings have supported the hypothesis that Earthing facilitates a significant transfer of free electrons into the body, a transfer resulting in rapid, sometimes instant, physiological changes. Earthing restores and maintains a natural internal electrical environment. Sokal and Sokal, two Polish doctors and researchers, performed a series of experiments some years ago and concluded that Earthing the human body represents a "universal regulating factor in Nature" strongly influencing bioelectrical, bioenergetics, and biochemical processes and appears to offer a significant modulating effect on chronic illnesses and dysfunction.[11]

Such effects are explained in detail below.

Analgesic Earth – the original anti-inflammatory

One of the most powerful effects of Earthing, as documented over nearly 20 years of research, along with feedback from thousands of individuals around the world, is reduction and even elimination of chronic inflammation, a common cause or aggravating factor for chronic and aging-related diseases, as well as pain.

This discovery suggests that the planet we live on is the original painkiller, the original anti-inflammatory: nature's way to counteract inflammation.

Briefly, the hypothesis for this effect is as follows: Free radicals (also known as reactive oxygen species, ROS) are positively charged molecules that strip electrons from healthy tissue, resulting in damage. Free radicals are produced in normal biochemistry, including the production of adenosine triphosphate (ATP), the body's molecule of energy. Every cell produces billions of free radicals every day. Earthing permits huge numbers of free electrons to enter the body where they are believed to neutralize free radicals. The active mechanisms of electron transportation to a site of inflammation may involve the nervous, meridian, and circulatory systems. It is assumed that the influx of free electrons absorbed into the body serves as a powerful anti-inflammatory reinforcement for the immune system. Earthing typically reverses both acute and chronic inflammation, and does so rapidly. For a detailed discussion of these dynamics, see Oschman.[3,12–14]

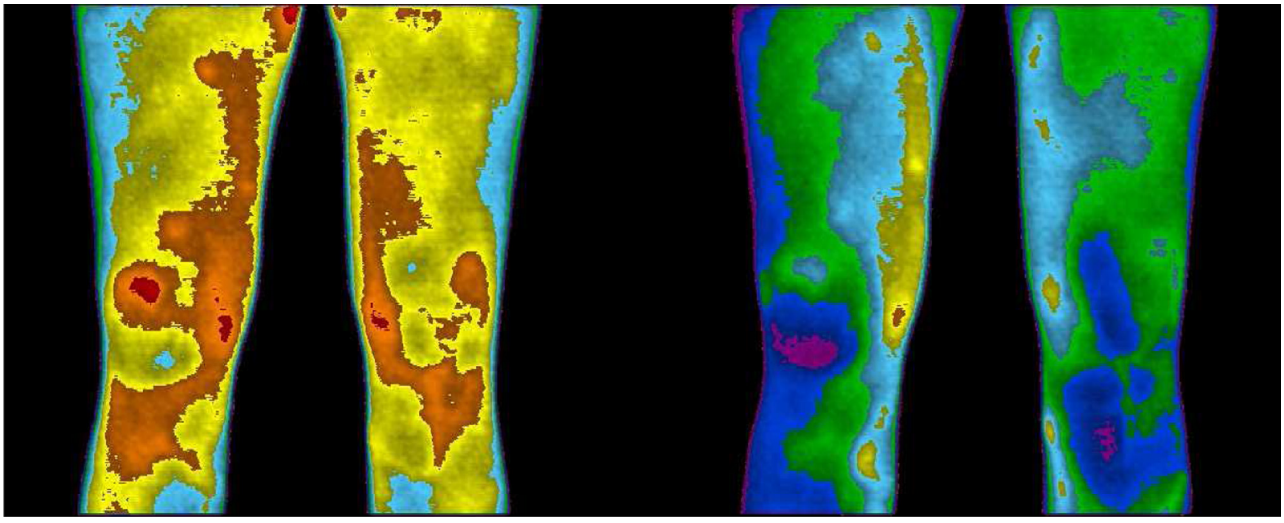

Fig. 1. These thermal images, of a patient with pain in the area of both knees, were taken a half-hour apart – before (left) and after Earthing (right). Tissue damage generates heat, represented by the hot colors on the left. The difference shows a clear and rapid resolution of inflammation.

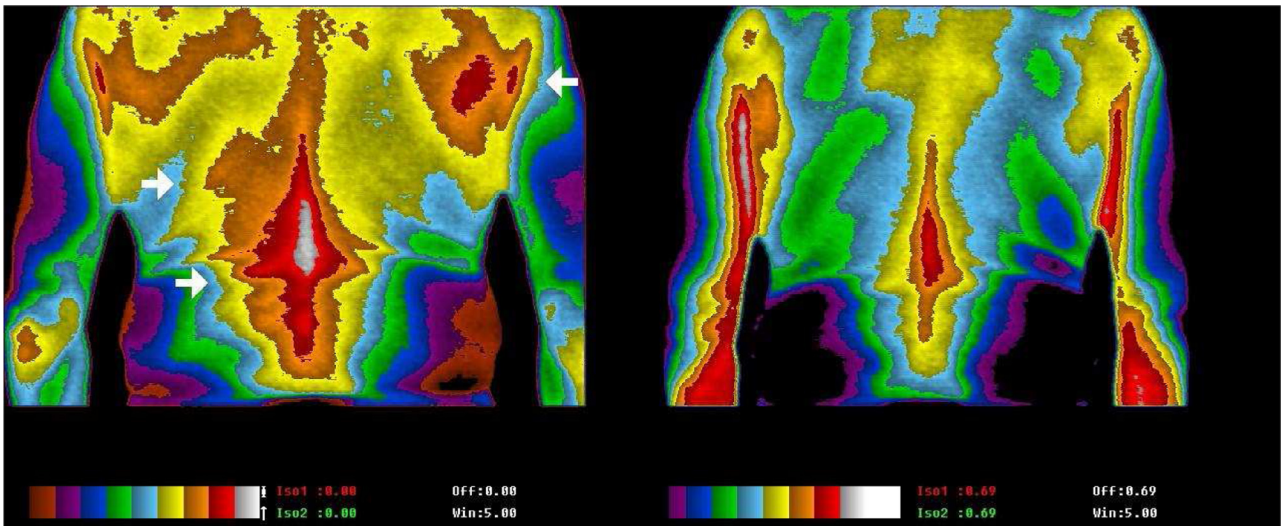

Fig. 2. These thermal pictures show significant reduction in inflammation, and accompanying rapid pain relief, for an 85-year-old male after sleeping grounded. The left image shows intense areas of inflammation and pain, identified by the arrows. The right image was taken after two nights of grounded sleep. The patient had complained of intense chronic left low back pain and right shoulder pain that interfered with sleep, and waking stiff and sore in the previous four months. Prolonged medical treatment had not been successful. After two nights of Earthing, he reported 50% less pain, 80% reduction in pain interfering with sleep, and 75% reduction in waking stiff and sore. After four weeks, he said his pain was totally gone with only occasional mild stiffness. He commented: "I have my life back.

Various studies have provided evidence of Earthing's dramatic impact on inflammation and pain, beginning in 2004 with medical thermal imaging[15] that register small changes in skin temperature to produce a color-coded image display. See Figs. 1 and 2.

Three studies based on a sports medicine research model called delayed onset muscular soreness (DOMS) documented clear evidence of pain relief and reduced inflammation from Earthing. DOMS refers to the pain, tenderness, and stiffness felt in muscles several hours to days after unaccustomed or strenuous exercise. The pain arises in affected muscles from temporary damage (micro trauma) to muscle fibers, usually increases in intensity in the first 24 h after exercise, and peaking from 24 to 72 h. Earthing significantly reduced the degree and duration of DOMS soreness and inflammation.[16,17]

The most recent DOMS study, conducted at the University of Salzburg, showed specifically that Earthing during sleep produces faster recovery and/or less pronounced markers of muscle damage and inflammation when compared to without Earthing. The researchers concluded that Earthing may represent a "simple methodology to enhance acute and long-term recovery after intensive" exercise and athletic training/performance for which currently there are no established treatment strategies.[18]

These exercise-based studies clearly indicate that Earthing has much to offer athletes and should surely be part of any fitness/athletic lifestyle.

Earthing research suggests that the rapid and pervasive impact of Earthing can't be explained by slow-moving nerve impulses or chemical reactions, rather that the influx of anti-inflammatory electrons from the Earth are at play, and able to quickly transit the conductive infrastructure of the body, and target sites of inflammation, as described by Oschman.[3,12–14]

This rapid electron transit activity can provide benefits at all ages, even for premature infants, as was reported in a 2017 study by doctors at the Pennsylvania State University Children's Hospital Neonatal Intensive Care Unit in Hershey. They found that Earthing premature infants produced immediate and significant improvements in measurements of autonomic nervous system (ANS) functioning critically important in the regulation of inflammatory and stress responses.[19]

Earthing the babies significantly increased heart rate variability (HRV) indicative of improved vagal tone. HRV refers to beat-to-beat alterations in heart rate, and is influenced by the sympathetic and parasympathetic branches of the ANS.

Earthing was achieved by adhering an Earthing patch (similar to an EKG electrode) to the skin of the babies, while in their incubators or cribs, and connecting the patch wire to the hospital's grounding system.

Among the babies tested, "grounding raised parasympathetic tone within minutes," commented researcher Charles Palmer, MB., ChB. "When tied to our previous work, which found that vagal tone was an important risk factor for necrotizing enterocolitis (editor's note: a devastating intestinal disease that affects about 10% of premature infants), this new finding may offer an opportunity to protect babies even further."[20]

More research is obviously needed to further demonstrate that Earthing enhances vagus nerve transmission and thereby improves stress and inflammatory regulatory mechanisms in preterm infants.

Recent research has revealed that the vagus nerve plays a major role in the so-called "anti-inflammatory reflex," a mechanism controlling basic immune responses and inflammation during pathogen invasion and tissue injury. Among other things, the nerve's actions help to inhibit excessive production of pro-inflammatory chemicals.[21,22]

Better blood flow

Another major documented benefit of Earthing is better blood flow. In a 2013 study, the zeta potential of 10 healthy subjects increased by an average of about 270% within two hours of Earthing. Zeta potential relates to the strength of the negative charge on the surface of red blood cells, a factor that maintains spacing of the cells in the bloodstream. The greater the charge the greater the potential of the cells to repel each other (less clumping), the lower the viscosity of the blood, and the better the flow. The increase measured in this study implies a natural blood thinning effect. The researchers concluded that Earthing "reduces blood viscosity and clumping" and "appears to be one of the simplest and yet most profound interventions for helping reduce cardiovascular risk and cardiovascular events."[23] The before and after effect on blood flow and viscosity can be seen on a video clip from the study.[24]

Utilizing a Speckle Contrast Laser camera, in 2014 Chevalier provided imaging evidence for the first time showing that Earthing generates a rapid improvement in facial blood flow and enhances ANS regulation of peripheral circulation. The study identified a fascinating

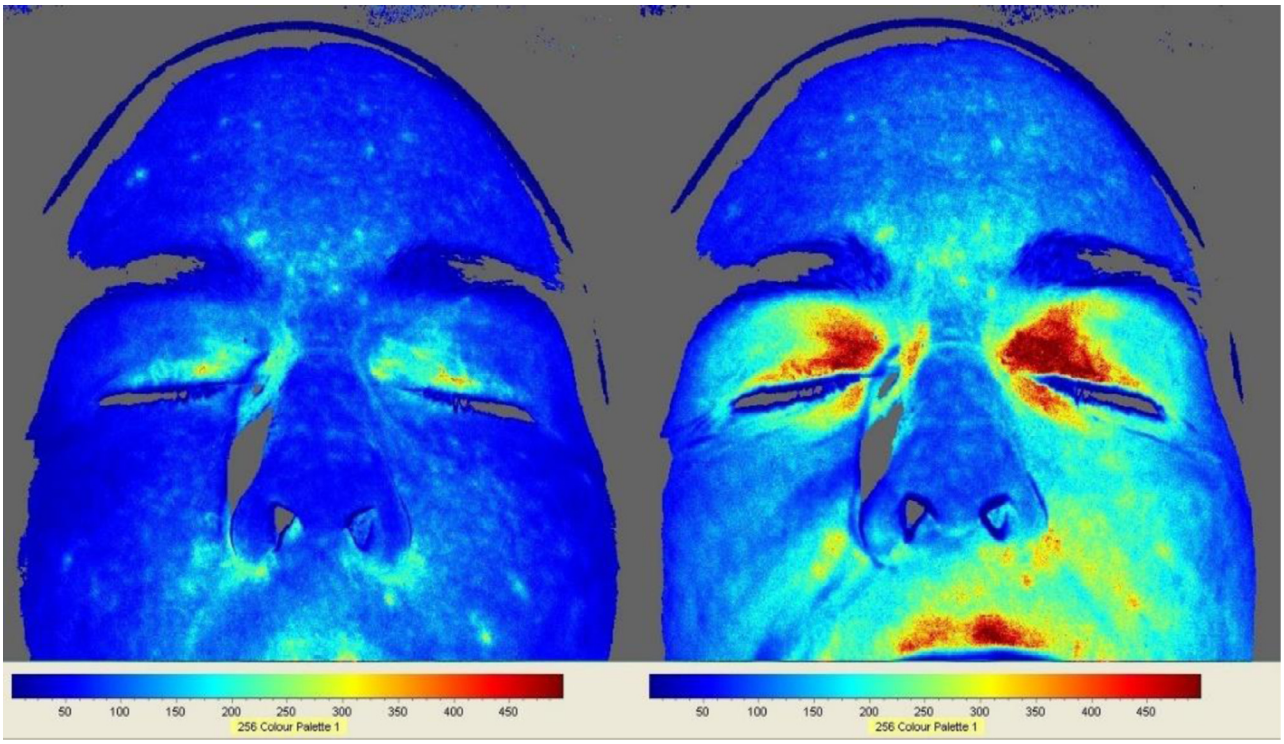

Fig. 3. Improved facial circulation (right image) of a female, 55, after 20 min of Earthing, as documented by Speckle Contrast Laser Imager (dark blue = lowest circulation; dark red = highest circulation). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

and clear rhythmicity in the facial blood flow of Earthing subjects but not of sham-Earthing subjects.[25] Such rhythmicity relates to a more efficient regulatory effect on blood flow by the ANS, and provides an explanation of how Earthing improves nourishment and repair of facial tissues and skin, and how it would thus generate a beauty effect. Improved facial microcirculation is a goal of various treatments used in the beauty industry. Fig. 3 shows the imaging results of one of the 40 participants in the study.

Chevalier suggested other mechanisms at play as a result of Earthing: improved blood fluidity (zeta potential), improved overall physiology, a calming effect on the body and normalization of the stress hormone cortisol (stress has been linked to many skin conditions),[26] and reduced inflammation. The laser camera study gives background to the comment heard repeatedly over the years after people start Earthing that they look younger and more rested, even within a short period of time. One example of this was an informal survey of 100 women at a wellness conference in 2012. The women filled out a questionnaire before and after one hour of Earthing while seated during a lecture in the conference hall. When their answers were tabulated, more than 75% reported that after Earthing they had a better mood, more energy, and an improved complexion radiating more vitality and color.[27]

In a 2015 study, thermal imaging was used to further capture the enhanced blood flow effect of Earthing, in this case, throughout the torso.[28] Arterial blood flows from the torso through the neck to reach the head and the face. One assumes that better blood flow to the face implies better blood flow to the brain. The imaging study described improved lymphatic fluid circulation in the torso and improved digestion. Fig. 4 shows an example from this study.

Photographic images of the healing of a non-healing wound (Fig. 5) offers another dramatic illustration of Earthing's quick repair work. They show accelerated resolution of an eight-month-old open wound near the ankle of an eighty-four-year-old woman, incurred as the result of wearing a poorly fitted boot just for a few hours. In that time, a blister developed and subsequently became a resistant open wound. Various treatments at a specialized wound center were unsuccessful. Vascular imaging revealed poor circulation in her legs. When she was first seen by a physician who offered Earthing "treatments" she had a mild limp and was in pain.

The patient was grounded for 30 min daily for two weeks with an electrode patch in the clinic while seated comfortably. After the first session, she reported a noticeable decrease in pain. After one week, she said the pain had reduced by about 80% and she was no longer limping. At the end of two weeks, she said she was completely pain free.

Other major benefits of Earthing are stress reduction and mood improvement, through a normalizing effect on the autonomic nervous system (as measured by improved heart rate variability and vagal tone) and the stress hormone cortisol.[2,29–33]

It is likely that a combination of effects described in this paper also impact blood pressure. Over the years there have been numerous anecdotal reports describing improved blood pressure after people start Earthing. In the first-ever clinical study examining this connection, all 10 hypertensive patients who participated had improved blood pressure readings and control within several months of starting Earthing, and in many cases well within that time frame.[33]

Promoting healthy lifestyle, such as eating a better diet and routinely exercising, presents a challenge for many doctors because patients frequently can't change unhealthy behavior.[34] Earthing presents no such challenge. It requires no effort, concentration, or discipline. People can ground themselves conveniently while sitting or sleeping. Earthing can be applied right in the clinic to patients waiting for an appointment. The fact that no extra effort is needed is a significant factor that bodes well for compliance and greater potential for improvements that both the physician and the patient will welcome. The frequently rapid results can motivate patients to take on other lifestyle recommendations such as exercise, meditation, yoga, and even dietary changes.

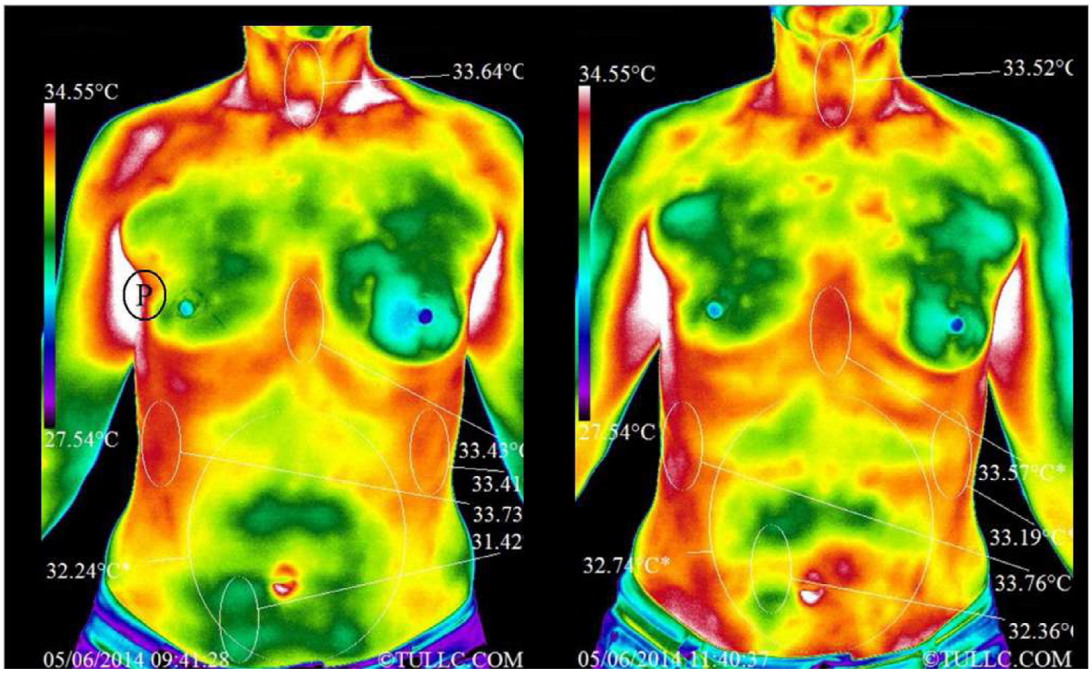

Fig. 4. Images above are of a woman, 55, just before Earthing (left) and just after Earthing for one hour (right). You see a greater uniformity of skin temperature on the right, indicating improved distribution and balance of blood and lymph circulation. The hottest color is white, followed by red and orange. Yellow and green are middle colors. The coldest is black, followed by purple and blue. The image on the left shows a hot neck area, indicating congestion of blood and lymph. The post-Earthing image shows less red, a decrease of congestion. A greater temperature balance is seen around the breast area after Earthing, indicative of better blood flow regulation. In the lower abdominal area improved digestion and decreased bloating are reflected by warmer coloring.[28] (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

The scope of Earthing's effects in the body, based on both research and a large volume of anecdotal reports, is seen in Fig. 6.

Clinical observations

In this section, the authors share their individual observations about incorporating Earthing in their clinical practices.

- **Wendy Menigoz, DN, Naprapathic Healing Center, Bourbonnais, Illinois**

For some nine years I have routinely used Earthing with my patients. These are individuals with head, neck and back pain, period pain, plantar fasciitis, rheumatoid arthritis and fibromyalgia, and everything in between. Typically, they have tried everything else before they come to see me. They are often desperate.

I require my patients to use Earthing. I see them for an initial consultation and sell them a $10 Earthing cord and give them a strip of Earthing patches. I tell them to Earth themselves in bed at night. They typically come back, with their pain dramatically reduced, sometimes gone altogether. Probably 98% of my patients are Earthing. If it doesn't work, I give them back their money. I get very few of those. People love it. It works. It's simple.

Keep in mind that I put these folks on some diet and supplement program as well. A combination. To me Earthing is every bit as important as drinking enough water, getting sunshine, fresh air, and eating well.

For people facing knee or hip replacement, I have found that Earthing patches or wrapping their joints with an Earthing mat helps take the pain away at night. And it will help them get through the day. If there is a lack of cartilage, Earthing may help to create an environment where perhaps cartilage regrowth can happen. But I also need to get vitamins and minerals into them.

Earthing has helped improve blood pressure in many cases. A few male patients mentioned improvement of erectile dysfunction, which I assume is a result of better circulation.

I've repeatedly seen conditions healed or improved that typically never get better, or that are typically treated with medication simply to manage the symptoms.

Some, after experiencing significant benefits from Earthing, ask me, how long do they have to do this? I laugh, and answer that for as long as they want to feel better.

- **Tracy Latz, MD, MS, Lake Norman Integrative Psychiatry, Mooresville, North Carolina**

In my integrative psychiatric practice, seminars, and online courses, I often recommend Earthing as part of a broad approach to healing. I consider it a powerful tool in my multidimensional healing medicine bag.

Some patients will follow through with Earthing while others won't. Those who do, about 65–75% tend to report good responses. These are individuals with a wide variety of emotional, mental, and physical problems, and often combinations of both psychiatric and physical diagnoses. They often tell me that after Earthing they feel much better. In my seminars and online courses, follow-up is probably 75%.

Earthing typically improves sleep; and for people with anxiety (post-traumatic stress disorder, generalized anxiety disorder, panic disorder, etc.), better sleep can make a huge difference. Some patients stop Earthing after their anxiety gets better. I have to remind them about what helped them get better.

In cases of depression, I often see improved symptoms and energy. Those who regularly ground appear to have a better tolerance to stressful situations.

Many chronic pain patients are referred to me from pain management doctors. These are patients living with constant pain that causes

Fig. 5. The column on the right are close ups of photos on the left. Top row shows the open 8-month non-healing wound and a pale-gray hue to the skin. Middle row photos, taken after one week of daily 30-minute grounding sessions, show marked level of healing and improvement in circulation, as indicated by the skin color. Bottom row, taken after two weeks, show the wound healed over and skin color looking dramatically healthier. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

anxiety, depression, or loss of hope for ever getting improvement in their situations. Many have either not responded well to - or are resistant to - pain medication. With Earthing, they usually report decreased levels of inflammation and pain. Thus, there is a decreased need for opiate medication. Given the current opiate crisis, Earthing should be considered a valuable addition to alternative medical treatments for chronic pain and 12-step recovery programs in rehabilitation centers as well as in the community.

Many patients I have treated for gluten intolerance and irritable bowel symptoms have significantly improved when they regularly use Earthing. While they may not be completely cured, their GI and stomach issues are better; pain and anxiety are both diminished.

I have also recommend Earthing to patients with auto-immune conditions. Earthing can be very beneficial as it lowers the stress response which is well-documented to create or worsen auto-immune disease flare-ups.

I see many patients with chronic fatigue, people who have exhausted their adrenal hormones. Most have a history of intense stress. With Earthing, they are much less fatigued and calmer. As their sleep cycle improves, the adrenal issues and thus cortisol levels

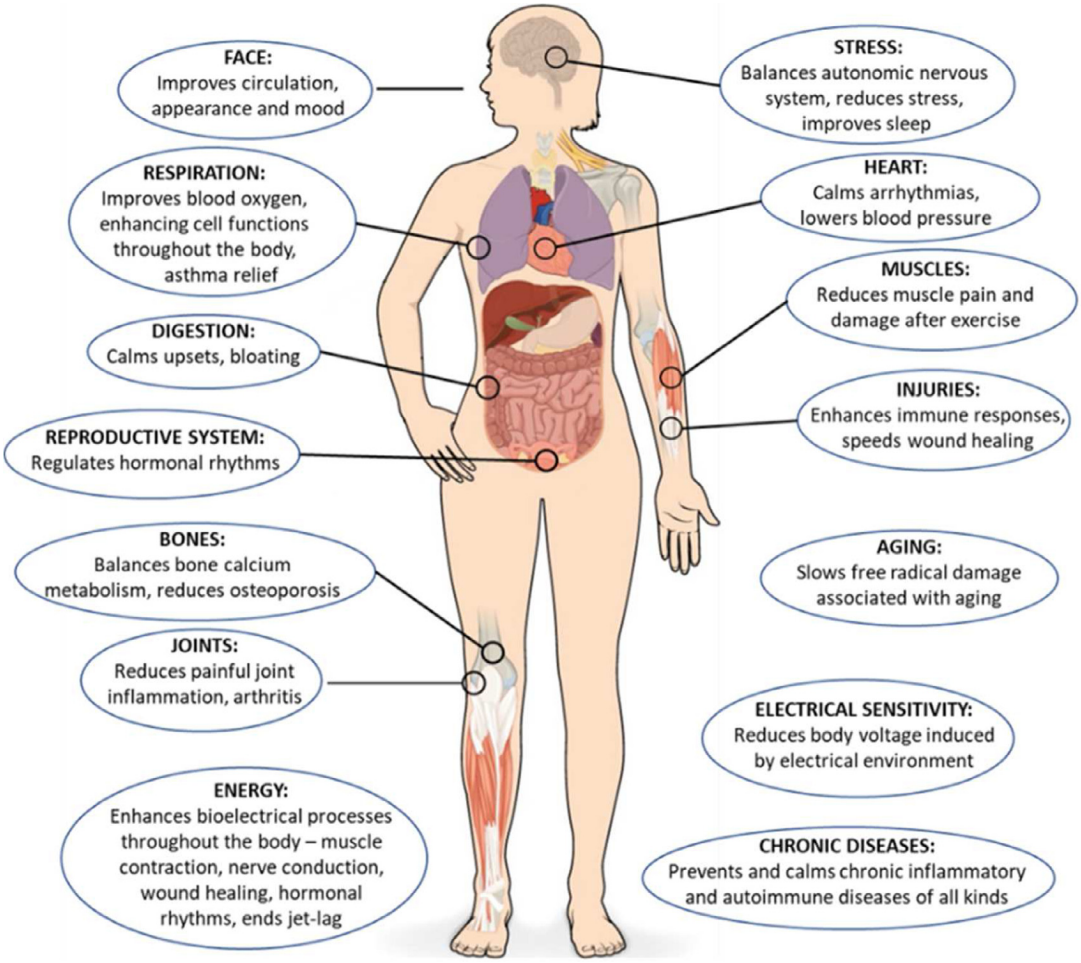
FACE:
Improves circulation, appearance and mood
RESPIRATION:
Improves blood oxygen, enhancing cell functions throughout the body, asthma relief
DIGESTION:
Calms upsets, bloating
REPRODUCTIVE SYSTEM:
Regulates hormonal rhythms
BONES:
Balances bone calcium metabolism, reduces osteoporosis
JOINTS:
Reduces painful joint inflammation, arthritis
ENERGY:
Enhances bioelectrical processes throughout the body – muscle contraction, nerve conduction, wound healing, hormonal rhythms, ends jet-lag
STRESS:
Balances autonomic nervous system, reduces stress, improves sleep
HEART:
Calms arrhythmias, lowers blood pressure
MUSCLES:
Reduces muscle pain and damage after exercise
INJURIES:
Enhances immune responses, speeds wound healing
AGING:
Slows free radical damage associated with aging
ELECTRICAL SENSITIVITY:
Reduces body voltage induced by electrical environment
CHRONIC DISEASES:
Prevents and calms chronic inflammatory and autoimmune diseases of all kinds

Fig. 6. Systemic benefits of Earthing.

start improving. They start to feel more energy and progressively better.

- **Robin A. Ely, MD, Center for Integrative Medicine, Potomac, Maryland**

Ongoing studies are providing increasing evidence for the hypothesis that a lack of Earthing is a significant factor, one of many, contributing to the striking escalation of chronic diseases in our generation. Earthing has been an integral part of human life, normative for the vast experience of mankind. It is only with the advent of shelter and footwear made of insulating materials that humans now spend their lives without any time in a 24 h period being electromagnetically connected to the Earth.

I recommend Earthing to anyone who will listen. I have found it to be very beneficial in my own life and in others who have taken heed and put into practice various Earthing methods, including, when available, walking barefoot on soil, grass, or sand, or using Earthing products indoors such as mats, throws, and patches.

The feedback includes many benefits: improved mood from sleeping grounded; less computer strain when working grounded; a baby displaying less irritability, more calmness, and seemingly settling into nursing more readily since mother grounds herself during nursing; rapid healing, such as using Earthing patches around badly bruised shin caused by slamming into table.

On a personal note, Earthing during sleep has reduced my morning achiness and also I sleep more soundly. I have 17 grandkids and am very active with them. Earthing helps me!!

- **Cimone Kamei, DAc, Jujube Clinic, Honolulu**

More than three years ago I learned about Earthing and started to go barefoot as much as I could. . .walk, run, and do yard work barefoot. I follow a good diet, and lifestyle routine, and I still noticed a significant energy difference quickly. Earthing took my energy to a new level. I also experienced more positivity, a better mood, and more clarity. I often sit grounded barefoot in my brick patio when working on the computer and find I get better ideas.

I was impressed to the point where I added Earthing to my clinic's multiple holistic programs – acupuncture, detox, blood work, nutrition and diet, and exercise. As part of a daily routine, I ask patients to be barefoot wherever and whenever they can, in their yards or at the beach or in a park, starting with 10 minutes and increasing as time will allow. I recommend to patients that they ground themselves indoors as much as they can.

My clinic is adjacent to the beach so I tell patients that after their office visit they should walk barefoot along the wet sand for at least 10 minutes, and longer if they can.

Some of my patients have considerable edema and water retention of the feet and legs, a result of cancer or failing kidneys. Their legs are ballooned. I often direct two clinic staffers to accompany such patients to the beach. They carry a shovel and dig a hole in the wet sand, then assist the patient to sit on the sand with legs lowered into the hole. The hole is then filled with sand. After about 20 minutes, the edema is typically gone. The patient walks back very happy and feeling much better, thanks to the "sand treatment."

I see many kids with atopic dermatitis, a common skin condition among children. I tell their parents bring the kids to a park and let them run around barefoot, or go to the beach and swim, walk barefoot. It heals up very fast, they tell me. The remedy is in the ground.

I see many auto-immune disorders like Graves' disease, lupus, multiple sclerosis, rheumatoid arthritis. Earthing has been very helpful in these cases as well.

Patients with bad circulation tell me that their extremities feel warmer, a result, I believe, of improved circulation. Pain patients report increasingly less pain, and if there has been throbbing, the throbbing goes down.

Overall, Earthing promotes improvements on many levels, and works so synergistically with everything else I do, and for so many different conditions. Lifestyle changes make a big difference. For many years I have seen how typical lifestyle changes like diet, detox, and exercise have improved blood test results. Since adding Earthing to my recommendations, the results have become dramatically better. . .like some kind of a healing switch has been turned on.

- **Gregory Melvin, DC, Total Thermal Imaging Wellness Center, La Mesa, California**

I have been recommending Earthing to patients for more than seven years. I was initially skeptical, but became quickly impressed after patients kept telling me about accelerated healing from Earthing. Their feedback involved many different problems, from pain to poor digestion.

Thermography has allowed me to confirm their healing process.

Initially, I wanted to see if and how Earthing could affect vascular changes and the extremities. I gave some Earthing products to a few patients and did pre-and post-Earthing imaging. I wasn't treating them, just asking them to be grounded while in bed for a few nights. When I imaged them again, I saw significant changes just within three days or so. I followed up that experiment with about a dozen additional patients. The same results. Significant improvements. I then knew this was something special and I needed to include Earthing as a pivotal element in my multi-faceted treatment plans and in my imaging analyses.

We are after all bioelectrical beings, and Earthing rapidly loads up the body's electrical system, and fast. It's like charging a battery.

I have repeatedly seen improvements in imaging results involving dural stress loads. The dural tissue is the outermost membrane of the fibrous connective tissue of the brain and spinal cord. Problems in this tissue, depending on where they develop, can show up as pain, numbness, or dysfunction in the organs and limbs.

Neurologically, having a tension or stress load in the central nervous system is like looking at a fuse box with a camera and seeing an overloaded system. And then when you bring in Earthing, it is no longer overloaded. A few nights of Earthing alone results in physiological changes in the spine that you normally don't see for weeks or even months of treatment. Even though other kind of treatments need to be added, patients are already reporting relief.

In 2014, I collaborated in a study using thermal imaging to analyze blood and lymph flow,[28] as well as digestive tract function, among 40 individuals.

The study demonstrated impressive improvements throughout the abdomen within a short period of time only among the Earthing participants, not the group that was not Earthing. Even more impressive, to the point of astonishment, was the rapid impact of Earthing on digestive tract motility.

Through thermal imaging, I have often seen significant changes among patients with common digestive tract disorders after just three nights of sleeping grounded that could otherwise take much, much longer using cleansing, postural, and other types of strategies. Earthing alone in a short time produces significant clearing up of congestion that I could see in the images, and this objective evidence accompanied positive feedback from patients.

Congestion in the digestive tract is often an undiagnosed and overlooked cause of such problems as constipation, abdominal discomfort and pain, chronic fatigue, swelling in the extremities, veins, and even in the testicles.

In the Earthing study, we saw thermal imaging evidence of improved ileocecal valve function within 20 minutes of Earthing. Astonishing. We saw no such changes in individuals who were not grounded during the experiment.

Earthing can't fix everything but it can fix a bunch of things, and often pretty fast.

- **Drew Sinatra, ND, LAc., Clear Center of Health, Mill Valley, California**

I have been Earthing patients since 2011 and regard it as a logical and productive part of a comprehensive lifestyle program for patients. I tailor patient protocols involving diet, supplements, stress reduction, and exercise. Earthing makes the program more complete and enhances my results. It is a basic daily lifestyle "treatment" that everybody should do for their own good, like drinking water and eating good food.

Ideally, I like patients to get outside and go barefoot as much as they can. There is generally a reduction in stress from this activity. They can walk, or also sit in a chair with feet placed on the grass. This is a simple treatment, and it's free! Weather and conditions permitting, I tell patients to try and do this for at least 10 or 20 minutes a day, and longer if they can. Take an Earthing break, I suggest. Stress release could result from being out in Nature or from the Earthing effect, or both.

For those who can't do it, and many people can't, there is the convenience of products developed for indoor Earthing. This option, although there is a cost involved in purchasing such products, offers good opportunity for routine Earthing while sitting or sleeping. People who do desk work, can also be doing Earthing while they work.

Patients Earthing at night sleep better and deeper. And pretty much immediately. They say their sleep is more restful. This is a big deal.

I have observed that patients using the Earthing bands or patches for local pain (tendonitis, bursitis, arthritis, injury) report less pain. One example is a 65-year-old female patient with elbow tendonitis who used an Earthing wrist band daily for about an hour. She came back two weeks later saying that her pain had gone down by about 50%. Her treatment protocol comprised Earthing, natural anti-inflammatory supplements, and contrast hydrotherapy.

I have found that fibromyalgia responds well to daily Earthing. An example was a 45-year-old female patient who followed my recommendation for Earthing in bed. About a month later she reported that her body pain had improved significantly, and she was sleeping more soundly during the night. I had also put her on low-dose naltrexone, an anti-inflammatory diet (no sugar, gluten, or dairy), boswellia, trace minerals, and liposomal glutathione (due to mold exposure), so she was doing these therapies at the same time.

I have observed that patients who I have Earthed during acupuncture sessions have a deeper more relaxed treatment compared to needles alone. The sensations in and around the needles did not change, but their experience on the table was different.

Discussion: Applying Earthing

One of the great advantages of Earthing as a lifestyle concept is the simplicity of application. Walking barefoot outdoors is obviously the most natural way. A grassy park, yard, or sandy beach are ideal locations. For other natural terrain, as well as concrete surfaces, Earthing footwear can be purchased to protect the feet. Do any online search.

Another option is barefoot gardening. Even getting the hands in the soil will provide an Earthing effect.

By far, the most convenient and most popular Earthing location is inside the home and/or office, where Earthing can be easily incorporated while sitting (working or relaxing) and sleeping. Earthing does not interfere with either activity, and can be done over many hours each day. Earthing products are in contact with the Earth through a cord inserted into the ground/earth port of a wall outlet (connected to the grounding system of a house or office) or attached to a ground rod placed in soil outside.

Clinicians can ground patients in the office (even in the waiting room before or after an appointment) for sessions of a half-hour or more utilizing grounding products such as conductive chairs, mats, and patches. Clinicians may elect to sell Earthing products in the same fashion as supplements are sold from the office. Patients can also be directed to online vendors.

Note: Earthing has broad physiological effects. As a result, medication dosages may need to be monitored. For instance, Earthing has a mild blood thinning effect, and may improve thyroid function and blood sugar regulation.

The full story on grounding can be found in the Earthing book. Research and updates are posted at the informational website www.earthinginstitute.net

Conclusion

Ongoing research shows that Earthing augments the physiology's infrastructure from the foundation up. As the burden of global disease and pain conditions grow increasingly larger, it is more necessary than ever to promote effective prevention and lifestyle practices. Such practices should include Earthing. Earthing means a return to a forgotten and vital aspect of Nature – Earth's healing properties – that has great potential to both prevent and treat common disorders afflicting modern society.

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